

Application No. 10/019,483
Reply dated March 23, 2004
Response to Office Action dated September 29, 2003

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

32. (previously presented) The battery according to Claim 40, wherein each positive electrode includes a fibrous-structure electrode which is filled with nickel hydroxide active compound.

33. (previously presented) The battery according to Claim 40, wherein a side of each positive electrode facing one of the walls is free of insulating covering layers and/or has an addition which increases the conductivity.

34. (previously presented) The battery according to Claim 40, wherein each of the negative electrodes has a higher capacitance than the corresponding positive electrode.

35. (currently amended) The battery according to Claim 34, wherein the excess of negative capacitance of the negative electrodes is ~~150 to 250%~~ 50 to 150% of the capacitance of the corresponding positive electrode.

36. (previously presented) The battery according to Claim 40, wherein each negative electrode includes a metallic substrate material, wherein the substrate material has a woven fabric and/or an expanded metal and/or a three-dimensional metal structure, and wherein a plastic-bonded compound comprising a hydrogen storage alloy is introduced into the substrate material.

37. (original) The battery according to Claim 36, wherein the compound faces the separator.

38. (previously presented) The battery according to Claim 40, wherein the negative electrodes are pasted asymmetrically.

39. (previously presented) The battery according to Claim 40, wherein each negative electrode has a structure which allows gases to pass through it.

40. (currently amended) A Ni/metal hydride battery of bipolar stack design, comprising:

a plurality of subcells disposed in a gastight casing and pressed against each other, each subcell including:

positive and negative electrodes,

a separator disposed between the positive and negative electrodes, and

electrolyte fixed in an amount in determined by porosity of the electrodes and separator;

an electrically conductive wall positioned between two adjacent subcells, the wall separating the electrolytes of the two adjacent subcells and electrically connecting the electrodes of the two adjacent subcells to one another;

a common gas space in communication with the subcells; and

two pressure plates functioning as current-discharge poles between which the subcells are disposed, wherein the subcells are permanently pressed against one another in an elastic manner, wherein the subcells form a stack, and the gas space is at the center of the stack.

41. (original) The battery according to Claim 40 further comprising a tie rod disposed in the gas space, the tie rod being used to apply pressure to the stack of subcells.

42. (previously presented) The battery according to Claim 40, wherein at least one sealing ring is disposed between each subcell and the common gas space, the at least one sealing ring preventing the passage of electrolyte and allowing the passage of gas.

43. (original) The battery according to Claim 42, wherein the at least one sealing ring includes porous polytetrafluoroethylene.

44. (previously presented) The battery according to Claim 40, wherein each wall has a hydrophobic coating material on its edges to prevent the electrolyte from leaking through.

45. (previously presented) The battery according to Claim 40, wherein each wall has a rubber coating on its edges to prevent the electrolyte from leaking through.

46. (previously presented) The battery according to Claim 40, wherein the subcells have a porous felt body, and wherein the felt bodies act as a store for excess electrolyte.

47. (previously presented) The battery according to Claim 40, wherein the negative electrode being coated with an active compound on only one side and/or the positive electrode, on a contact side, being free of active compound, electrical contact being effected only by the electrodes, the separators and the walls being pressed onto one another.

48. (previously presented) The battery according to Claim 40, wherein the pressure between the components of the individual subcells and the subcells is approximately 10 to 35 N/cm².

49. (previously presented) The battery according to Claim 40 further comprising an elastic element provided as a pressure-exerting component for pressing the subcells together.

50. (previously presented) The battery according to Claim 40, further comprising two end plates, which are at a fixed distance from one another and exert a pressing force against the subcells.

51. (previously presented) The battery according to Claim 40, wherein the walls are metallic, and boundary surfaces and/or edges of each wall have a hydrophobic coating that includes one or more bituminous substances of good adhesion.

52. (currently amended) A Ni/metal hydride battery of bipolar stack design, comprising:

a plurality of subcells disposed in a gastight casing and pressed against each other, each subcell including:

positive and negative electrodes,

a separator disposed between the positive and negative electrodes, and

electrolyte fixed in an amount in determined by porosity of the electrodes and separator;

an electrically conductive wall positioned between two adjacent subcells, the wall separating the electrolytes of the two adjacent subcells and electrically connecting the electrodes of the two adjacent subcells to one another;

a common gas space; and

two pressure plates functioning as current-discharge poles between which the subcells are disposed, wherein the subcells are permanently pressed against one another in an elastic manner, wherein the subcells form a stack having a central passage, and wherein the individual subcells are connected to the central passage by porous connecting elements.

53. (original) The battery according to Claim 52, wherein the central passage has a porous tube.

54. (original) The battery according to Claim 52, wherein a porous connecting element and/or a porous tube include porous polytetrafluoroethylene.

55. (previously presented) The battery according to Claim 52, wherein the central passage has a tie rod for relieving load on end plates.

56. (currently amended) A method for producing a battery, comprising:

disposing a plurality of subcells in a gastight casing and pressing the subcells against each other, wherein each subcell has positive and negative electrodes and a separator disposed between the electrodes;

impregnating each separator with a predetermined amount of electrolyte;

disposing an electrically conductive wall between two adjacent subcells to separate the electrolytes of the two adjacent subcells and to provide an electrical connection between the electrodes of the two adjacent subcells;

placing a common gas space in the center of the subcells so that the common gas space is in communication with the subcells;

disposing the subcells between two pressure plates functioning as current-discharge poles; and

filling the subcells with electrolyte before the subcells are assembled.

57. (currently amended) A method for producing a battery, comprising:

disposing a plurality of subcells in a gastight casing and pressing the subcells against each other, wherein each subcell has positive and negative electrodes and a separator disposed between the electrodes;

impregnating each separator with a predetermined amount of electrolyte;

disposing an electrically conductive wall between two adjacent subcells to separate the electrolytes of the two adjacent subcells and to provide an electrical connection between the electrodes of the two adjacent subcells;

placing a common gas space in the center of the subcells so that the common gas space is in communication with the subcells;

disposing the subcells between two pressure plates functioning as current-discharge poles;

making each of the positive and negative electrodes, separators and walls in the shape of a plate; and

placing the plates in a stack and pressing the plates together permanently during assembly.

58. (currently amended) A method for producing a battery, comprising:

disposing a plurality of subcells in a gastight casing and pressing the subcells against each other, wherein each subcell has positive and negative electrodes and a separator disposed between the electrodes;

impregnating each separator with a predetermined amount of electrolyte;

disposing an electrically conductive wall between two adjacent subcells to separate the electrolytes of the two adjacent subcells and to provide an electrical connection between the electrodes of the two adjacent subcells;

placing a common gas space in the center of the subcells so that the common gas space is in communication with the subcells;

disposing the subcells between two pressure plates functioning as current-discharge poles; and

evacuating the battery and filling the battery by flushing with hydrogen without pressure.